AGRICULTURAL PRODUCTION ATTAINABLE BY 1955 IN OHIO

and

DESIRABLE PRODUCTION ADJUSTMENTS
(Under assumed conditions)

Prepared by

The Ohio Committee on Agricultural Production Capacity

Department of Agricultural Economics and Rural Sociology
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and
Ohio State University

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INTRODUCTION

This is the third study in recent years of Ohio's agricultural production capacity. Early in 1943 the Ohio Agricultural Experiment Station and the College of Agriculture of the Ohio State University were asked by the Bureau of Agricultural Economics of the United States Department of Agriculture to prepare an estimate of Ohio's maximum wartime agricultural capacity.

In 1944, in anticipation of post war adjustment problems, the Bureau of Agricultural Economics called upon the same agencies to re-examine the state's agriculture. View was to determine the state's ability to produce under an agricultural system which would restore the depleted land resources of the war years and thereafter maintain the productive capacity of the land.

The present study was called for by the United States Department of Agriculture and the land grant colleges. Its purpose is to provide material on Ohio's maximum sustainable agricultural output that can be attained under average weather by 1955, for use in planning for national defense and to indicate efficient ways of attaining and sustaining the high level of farm production desirable from the standpoint of national security.

In each study the estimates were made against a background of assumptions in part provided by the Department of Agriculture. Major differences in these have been in the degree of urgency for production and in the attitude toward the effect of the attainment of production on the land resources.

First, the point of view was to win the war and if this necessitated depleting the soil, to proceed but to hold to a minimum the irrepairable damage. Second, with the emergency past but demand still high, maintenance and improvement of the land received emphasis. Now, the viewpoint toward the land is that output of farm commodities should currently be increased but not beyond the level where production can be sustained since the present high demand appears likely to continue, with the possibility of increasing sharply in event of total mobilization.

Present estimate of the state's agricultural capacity was developed by a state committee on Ohio's agricultural production capacity. Dr. J. I. Falconer, department of agricultural economics and rural sociology, Ohio State University and Ohio Agricultural Experiment Station, served as chairman. Membership of the committee consisted of representatives from each of the following agencies:

Ohio Agricultural Experiment Station
Ohio State University College of Agriculture
- Department of Agricultural Economics & Rural Sociology
- Department of Agricultural Engineering
- Department of Agronomy
- Department of Animal Science
- Department of Dairy Science
- Department of Horticulture
- Department of Poultry Husbandry

Agricultural Extension Service
Bureau of Agricultural Economics
Farmers Home Administration
Production and Marketing Administration
Soil Conservation Service.

Several sub-committees, each comprised of men from within the same departments, contributed materially. Results of the various committee meetings and valuable suggestions of numerous cooperating individuals were assembled and prepared for publication by J. H. Sitterley of the department of agricultural economics.

Basic Assumptions

As in past studies, estimates and suggestions presented in this report were arrived at as nearly as possible on a basis of a set of assumptions. In arriving at the estimates for 1955 the following basic assumptions were made:

1. That there will be a continued high level of defense activity and strong mobilization efforts.

2. That the resulting full employment with its accompanying high consumer income, the rapidly growing domestic population, the large foreign requirements, and the need to build up and maintain adequate reserves will result in a strong and enlarging demand for farm products in the years ahead.

3. That farm prices and income will remain favorable with a cost price relationship such as to provide a parity ratio of 105 to 110.

4. That the labor force available to agriculture which is currently a limiting factor, may be expected to shrink further and continue in short supply as long as defense activities remain high.

5. That production resources such as fertilizers, machinery, tractor fuel, spray materials, etc., will be available in sufficient quantities to achieve the potential production estimated as attainable by 1955.

6. That average weather conditions will prevail.

7. That farmers' plans are more flexible now than formerly because of training, experience, and equipment, thus more quickly adjusted to changing conditions.

8. That in the long run it is desirable and necessary to maintain and improve the production of the state's agricultural resources in the interest of national and individual well being; and that only in the event of a real national emergency is the state justified in expanding its depleting acres beyond the point where output can be maintained and increased if need be, since in the future agriculture may be called upon to meet even more urgent and vital needs.

9. That any immediate or short run increase in demand for farm products, except the most urgent and temporary in nature, can best be met through intensification on existing acres by a more general use of production and management techniques known to be most effective.

10. That research and education work will be continued and expanded for the purpose of finding and putting into practice additional techniques for maintaining and rebuilding our land resources, for expanding output per farm worker, and for expansion of total production when needed.

Estimates and suggestions of this report, based upon these assumptions, are not intended to be goals but rather as bench-marks of Ohio's agricultural capacity. Estimates represent the best judgment of the members of the committee and cooperating individuals as to crop acreages, yields, and the livestock numbers that Ohio farmers may be expected to or should attempt to attain in the period indicated and under the assumed conditions.

Estimates Called For

Two estimates of production possibilities were asked for. First, attainable production for 1955, and second, how far farmers can go by 1952 toward the 1955 attainable output. In addition, the state committee was asked to estimate the quantities of fertilizer, lime, specialized machinery, labor, and other important production resources which would be required to reach the 1955 level and pattern of production considered attainable under the assumed conditions.

State Totals and Averages

Because of the lack of up-to-date census information on a county basis at the time the study was undertaken, all estimates were prepared on a state basis. Undoubtedly somewhat greater accuracy and usefulness would have resulted from the estimates if they could have been set up for each of the 11 agricultural areas of the state. However, in arriving at state totals and averages, information assembled in 1944 on the production possibilities and needed adjustments of the different agricultural areas of the state was employed as a guide. Furthermore, each year for the past 10 Ohio has examined its agricultural production possibilities and considered the adjustments needed from the viewpoint of maximizing both the current and long time return of the state's farmers and has made recommendations leading to that end. Information and exoeriences acquired in the preparation of these annual reports was also drawn upon in the preparation of the 1955 production possibilities and resource requirements and in estimating the production attainable in 1952.

State totals and averages envisioned as attainable by 1955 will be composites of the efforts of all of the state's farmers. Consequently, neither the direction indicated in acreage and livestock number nor yield per acre and output per animal will be applicable to each individual farm. Instead each individual farm must be recognized as a unit in itself.

Many farmers already are attaining yields per acre and output per animal greatly in excess of that estimated to be attainable for the state as a whole. At the same time others with low producing land and livestock or those employing less efficient production methods are securing yields below the state average. Some farmers are producing too many acres of depleting crops and will make their contribution by adjusting those crops downward while others with unused labor and land resources will do their part by expanding.

Each farmer must appraise his own operations and determine where

he best can contribute. A high percentage should aim at much higher levels than those presented in this report for 1955. Some soils are more productive than others, some farm operators are more capable than others or have more capital with which to operate. For many farms, the attainment of the best use of their resources would necessitate major changes in their farm organizations and practices. There are few farms in the state but what can further expand production profitably without depleting the productivity of their resources.

Effects on Soil Productivity

Long-time trend in the productivity of the average soils of Ohio has, for many years, been downward. Nevertheless, yields of crops have been sustained and even raised by the use of numerous new cultural techniques and more efficient varieties. Had not the productivity of the soils been declining, however, these new techniques and plant strains would have produced far greater increases in yields than those realized.

For a number of years Ohio agronomists have been calculating, by means of a system of productivity balances, the percentage changes that occur annually in the productive capacities of the soils of the state under specific cropping and management systems. 1/ These calculations indicate that some progress was made during the thirties toward a better balance (lesser negative factor), but this was abruptly reversed by the stimulus to produce in order to meet World War II requirements for food. (See Table I, page 6).

This acceleration in the rate of soil deterioration was a source of concern to farmers, and many curtailed their acreage of depleting crops and stepped up their acreage of soil building crops. These adjustments were sufficient to produce an appreciable reduction in the rate at which the state's soils were being depleted.

In addition to these shifts in the state's cropping pattern toward less depletion there has been a rapid expansion in the installation of erosion and water control measures which have also decreased the rate.

Sharp curtailment in the rate of soil depletion which took place in 1947 was influenced appreciably by the adverse spring season which restricted the acreage of intertilled crops below what it would otherwise have been. With the larger acreage of intertilled and small grain crops in 1948, some increase in the rate of soil deterioration again took place. The crop pattern reported for 1951, together with the further expansion in erosion and water control measures placed in operation by farmers, cut the rate of depletion to -.28.

1/ "Our Heritage - The Soil," Ohio Agricultural Extension Service, Bulletin #175.

TABLE 1 - Ohio: Soil Productivity Balance*

Year	Productivity balance factor	What's happening to productivity of Ohio soils
1929	-.65	depleting
1935	-.61	depleting
1939	-.51	depleting
1942	-.61	depleting
1943	-.64	depleting
1944	-.76	depleting
1945	-.70	depleting
1946	-.63	depleting
1947	-.52	depleting
1948	-.55	depleting
1949	-.46	depleting
1950	-.36	depleting
1951 reported	-.27	depleting
1952 suggested	-.28	depleting
1955 attainable	-.16	depleting

Data prepared by J. A. Slipher, Extension Conservationist, Ohio State University.

Long-time objective is a crop and livestock pattern for the state that will maintain and improve the productivity of the land. In the interests of national and individual farm security, progress toward this goal should be made as rapidly as conditions permit. Farm management studies in Ohio show that farming is more profitable, and greater physical output is secured, where the productivity of the land is maintained than where it is exploited.1/ The farming pattern of the state will still require major adjustments before the long-time objective is reached.

Land use and cropping pattern recommended as attainable by 1955 with its suggested production practices will continue to deplete the soil resources of the state. It is believed, however, that at the low rate at which depletion will occur for the state as a whole, yields can be sustained for a considerable period by increased expenditures for larger amounts of chemical fertilizer and by expanding the use of improved cultural and soil maintaining practices.

Land Use Pattern For Ohio

In 1945 there were 21,927,844 acres of land in farms in Ohio according to the Federal Census of Agriculture. This is 2,601,390 acres below the peak acreage recorded in 1880. Urban and industrial growth are responsible for some of the decrease, but the major part has been caused by retirement from farms because of low productivity and depleted character of the soil.

1/ "The Relationship Between Soil Maintenance and Profitable Farming," Ohio Agricultural Experiment Station, Bulletin #604.

Some land still in farms is of such low productivity that its use for farming is uneconomical and results in poor use of scarce factors such as labor, fertilizer, and equipment. Consequently, in the interests of maximizing the output of the state's agricultural resources on a sustained basis some further shrinkage in the area in farms should be encouraged and is expected to take place due to its submarginal character. Nonfarm uses as residential, commercial, and industrial sites, and highway improvement programs also will draw more land out of farms in the years ahead. It was estimated that by 1955 the area in farms will be 21,300,000.

Utilization of the land in farms in the 1945 Census of Agriculture was as follows:

Cropland (includes cropland harvested, idle, failed and cropland used only for pasture.)	13,301,912
Permanent Pasture Other Than Woods	4,552,157
Woodland Pasture	1,559,887
Woods Not Pastured, Farmsteads, Roads and Waste	2,513,888

Utilization pattern of the land in farms in 1955 is pictured by the committee as follows:

Cropland (includes cropland harvested, idle, failed and cropland used only for pasture)	13,200,000
Permanent Pasture	4,400,000
Woodland Pasture	1,100,000
Woodland Not Pastured, Farmstead, Roads and Waste	2,600,000

Retirement of land now in farms to other uses that is expected and in part recommended to take place by 1955 will result in a decrease of approximately 100,000 acres each of cropland and permanent pasture land. Most of that expected to be retired will be low quality land, a considerable proportion of which is currently idle, with the result that the effect on output will be negligible.

Cropland Utilization and Production

Cropland may be broken into four categories of use -- intertilled crops, small grain crops, sod crops, and idle. Distribution among these which was believed would yield the maximum sustainable output in 1955 is 4,545,000 acres of intertilled, 3,380,000 acres of small grains, 4,900,000 acres of sod crops and 375,000 acres of idle. Heaviest demands of World War II on the land was registered in 1944 when the intertilled crops (most depleting use) occupied 5,464,000 acres, small grains 3,263,000 acres, sod crops (soil building) 3,582,000 acres, and idle 291,000 acres. Least destructive distribution among these uses was registered in 1950 at which time the acreage of intertilled was slightly more than offset by the area in sod crops.

Table 2

Ohio: Suggested Utilization of Cropland in 1955, With Comparisons

Use of cropland	Reported 1950		Expected 1951		1952 Suggested		1955 Attainable	
	Acreage	% of total cropland	Acreage	% of total cropland	Acreage	% of total cropland	Acreage	% of total cropland
Column	1	2	3	4	5	6	7	8
	1000 acres	%	1000 acres	%	1000 acres	%	1000 acres	%
Intertilled crops	4,624	35	4,874	37	4,762	36	4,545	34
Small grain crops	3,374	25	3,232	24	3,340	25	3,380	26
Sod crops	4,702	35	4,644	35	4,673	35	4,900	37
Tame hay & seed crops	2,756	21	2,799	21	2,795	21	2,805	21
Rotation pasture	1,946	14	1,845	14	1,878	14	2,095	16
Idle cropland	600	4	525	4	500	4	375	3
Total cropland	13,300		13,275		13,275		13,200	100

Distribution among these four categories suggested for 1955 by the committee is not considered desirable as a long time objective pattern for the state even though it is believed that output can be sustained for a number of years. It is considered undesirable because it is still depleting in character and requires increasingly heavier inputs of commercial fertilizers and other factors of production to maintain yields.

Land use pattern and individual crop acreages for 1950, 1951, the suggested acreage for 1952 and the attainable acreage for 1955 for Ohio are summarized in Form 1, pages 9 and 10. Under the land-use recommended, the crop acreage pattern and yield levels considered attainable in 1955, the total production of grain, hay, and pasture would exceed the ten year 1940-49 average annual output by 19 percent, 25 percent and 22 percent respectively. (See Table 3, page 11). This high level of production was thought to be attainable under average weather conditions by the members of the Ohio Committee on Production Capacity.

Acreage Adjustments - Major Crops

Major changes in crop acreages deemed essential by the members of the committee to the achievement of the maximum sustainable output by 1955 were in corn, soybeans, and rotated sod crops. Little or no change was suggested in the acreage of tobacco, sugar beets, potatoes, popcorn, and vegetable and garden crops for 1955 from that planted in 1951 and previous years. Wheat, oats, and the minor small grains proposed for 1955 would occupy only slightly more land than the average of the 5 year period 1947-51 but 148,000 acres more than the small acreage of 1951.

Ohio - Estimates of Use of Farm Land, "1955 Attainable" With Comparisons

Use of farm land	Acre-age	Reported for 1950	Reported or estimated for 1951	1952 suggested	1955 attainable
Column	1	2	3	4	5
		1000 acres	1000 acres	1000 acres	1000 acres
Corn, all	P	3384	3621	3550	3400
Corn for grain	H	3253	3511	3445	3310
Corn for silage	H	111	100	95	80
Soybeans, grown alone	P	1100	1133	1075	1000
Soybeans for beans	H	1056	1099	1040	970
Soybeans for hay	H	28	24	25	20
Tobacco, all	H	20.4	20.3	20.5	21
Burley	H	12.6	14.5	14.5	15
Other domestic	H	7.8	5.8	6.0	6
Sugar beets	P	30	16	30	32
Irish potatoes	P	38	31	35	35
Popcorn	P	12	11	12	12
Vegetable crops produced for sale	Total	74	77	75	80
Vegetables for processing					
Green peas		2.5	3.3		
Tomatoes		23.2	19.3		
Sweet Corn		9.8	16.0		
Lima Beans		.8	.7		
Cabbage (kraut)		1.8	1.6		
Cucumbers for pickles		2.1	2.4		
Vegetables for fresh market					
Cabbage		2.8	2.6		
Cantaloups		1.1	1.0		
Carrots		1.5	1.3		
Celery		.8	.8		
Onions		.8	.7		
Tomatoes		3.5	3.3		
Sweet Corn		7.0	7.0		
Other vegetables		17.3	17.0		
Adjustment for multiple use		34.	35.	35	35
Total cropland used for intertilled crops 1/		4624	4874	4762	4545
Oats	P	1181	1264	1275	1300
Barley	P	27	23	25	30
Winter wheat	P	2172	2150	2100	2100
Oats for grain	H	1147	1227	1265	1265
Barley for grain	H	26	22	25	25
Grains cut green for hay	H	20	20	20	20
Rye for grain	H	35	20	25	25
Buckwheat	H	14	15	15	15
Adjustment for multiple use		55	240	100	90
Total cropland used for close-growing crops 1/		3374	3232	3340	3380

Ohio - Estimates of Use of Farm Land, "1955 Attainable" With Comparisons

Use of farm land	Acreage	Reported for 1950	Reported or estimated for 1951	1952 suggested	1955 attainable
Column	1	2	3	4	5
Hay, all tame--except soybean, cowpea, peanut & small grain hay	H	2632	2694	2690	2700
Hay, all tame	H	2680	2738	2735	2740
Seeds, hay and cover crop, all	H				
Alfalfa	H	7	15	15	25
Red clover	H	310	300	300	325
Sweet clover	H	18	15	15	20
Alsike	H	23	20	20	25
Timothy	H	83	70	70	60
Rotation (cropland) pasture		1946	1845	1878	2095
Adjustment for multiple use		317	315	315	350
Total cropland used for sod crops 1/		4702	4644	4673	4900
Idle cropland		600	525	500	375
Total cropland 1/		13300	13275	13275	13200
Orchards, vineyards, & small fruits, total		150	150	150	150
Other plowable pasture		2200	2200	2200	2200
Open non-plowable pasture		2300	2250	2250	2200
Woodland pasture		1300	1300	1200	1100
Woodland unpastured and other land in farms		2350	2350	2350	2450
Total land in farms		21600	21500	21450	21300
Winter cover crops, grasses	P	20	20	20	25
Winter cover crops, legumes	P	10	10	10	15
Other pasture in farms					
New seedings after harvested nurse crops	U	1500	1500	1500	1500
Hay and seed-crop aftermath	U	1000	1000	1000	1000
Winter grains grazed (pre-harvest)	U	50	15	50	50
Stalk and stubble fields	U	500	600	600	500

1/ Total acres used for crops is less than the sum of the acreages of individual crops to the extent that two or more crops were, or will be, planted on or harvested from the same land during the year.

P = Planted acres

H = Harvested acres

U = Used

TABLE 3 - Ohio: Production of Grain, Hay and Pasture "1955 Attainable," With Comparison

Crop	1940-49 Average		1950 Reported		1951 Expected 1/		1952 Suggested		1955 Attainable	
	bushels	tons	bushels	tons	bushels	tons	bushels	tons	bushels	tons
	(1000)	(1000)	(1000)	(1000)	(1000)	(1000)	(1000)	(1000)	(1000)	(1000)
Corn	169,584	4750.2	174,928	4899.9	201,544	5645.5	191,700	5369.7	204,000	5714.3
Wheat	46,583	1398.9	46,596	1399.2	34,308	1030.3	48,480	1455.8	50,700	1522.5
Oats	43,748	699.9	41,292	660.7	50,307	804.9	46,740	747.8	51,865	829.8
Barley	769	18.4	728	17.4	616	14.8	675	16.2	700	18.0
Rye	800	22.4	665	18.6	340	9.5	425	11.9	475	13.3
Buckwheat	316 2/	7.9	266	6.6	220	5.5	270	6.7	300	7.5
Soybeans	18,552 2/	557.1	23,232	697.6	24,728	742.5	23,920	670.0	26,000	780.8
TOTAL		7454.8		7,700.0		8,253.0		8278.1		8886.2
% of ten year average		100.0		103.3		110.7		111.0		119.2
TOTAL TAME HAY		3722		3,994		4,326		4,102		4658.0
% of average		100		107.3		116.2		110.2		125.1
ALL PASTURE A.U.M.		14,040 3/		14,902		14,627		14,829		17158.
% of average		100		106.5		104.1		105.6		122.2

1/ August 1st crop report.
2/ 1939-48 average.
3/ 1944-49 average.

Maximum corn acreage considered possible in 1955 by the committee if the yields of corn and other crops are to be increased by then and sustained thereafter was 3,400,000. This is 145,000 acres less corn than the average annual acreage grown during the 5 year period 1947-51. However it is more than a half million acres greater than was considered possible by the 1944 state committee that set up the long time crop and livestock pattern designed to fully and economically maintain the productivity of the soil.

One million acres of soybeans was suggested by the committee for 1955. It is approximately the same as the average of the 5 years 1947-1951 but 133,000 acres below that planted in 1951. The reduction below the 1951 level, like the reduction recommended for corn was made to allow the minimum increase in the rotated sod acreage required if yields and total production are to be raised by 1955 and sustained thereafter.

An increase in the acreage of rotated sod crops of 256,000 acres above that grown in 1951 and more than a half million acres above the 5 year 1947-51 average was deemed necessary and attainable by 1955. This sizable increase in sod crops was thought necessary if the goal of an enlarged output of agricultural products for the state was to be realized by 1955.

Attainable Yields and Desirable Adjustments In Production Practice

Crop yields estimated by the sub committee on crops to be attainable in 1955 are set forth in form 3, page15. Significant sustainable increases in yields of most crops were considered possible under average weather conditions. Estimated increases in yields above those established as normal for 1950 are the result of the combined effect of (1) the adjustments proposed in the acreage of the major crops, (2) the suggested alteration in the land-use pattern of the state, and (3) the greatly expanded use of the recommended soil management and crop production practices.

A significant part or the increase in yields considered attainable by 1955 was based on the establishment and maintenance of more and better meadow crops. Achievement of these rests primarily upon some curtailment in the acreage of the intertilled crops of corn and soybeans below the present level, and on more general use of meadow improving practices. Of these practices the more extensive use and heavier applications of lime is especially important since there still remains a large acreage of cropland deficient in lime (see form 5, page 18).

Greatly expanded acceptance and employment of the more effective production practices can and will be largely brought about through vigorous, well-designed and executed, educational programs and other practical inducements such as the making available the materials needed and a cost price relationship sufficiently favorable to the farmer to bring out the increased effort required to employ the improved practices. Some of the more important and effective practices recommended for expansion are set forth in form 2, pages 13 and 14.

Form 2. Improved Production Practices on Crops, 1950 and "1955 Attainable" in Ohio

Major Improved Production Practices to be Expanded 1/	Estimated Extent of Use In 1950	1955
	(acres)	(acres)
CORN		
Nitrogen 38# per acre	150,000	1,500,000
Adequate stands	600,000	1,200,000
36# Phosphorus and 36# Potash per acre	1,800,000	2,700,000
New and improved strains of seed	1,500,000	2,250,000
Systematic crop rotation	2,700,000	2,850,000
High quality legume meadows	750,000	1,200,000
Adequate drainage	attained on 50,000	additional acres by 1955
Contour cultivation	attained on 100,000	additional acres by 1955
Effect of the above practices on production:		
Yield per acre	52 bushels	60 bushels
OATS		
(1) Apply 4# nitrogen, 24# phosphorus and 12# of potash per acre	945,000	1,105,000
(2) Apply an additional 5# of nitrogen, 10# of phosphorus and 10# of potash per acre to that applied in practice No. 1		552,000
Effect of the above practices on production:		
Yield per acre	38 bushels	41 bushels
WHEAT		
Increase phosphorus application to 42# per acre and continue present rate of nitrogen and potash	200,000	1,000,000
Top dress with 20-30# of nitrogen per acre	10,000	40,000
Seeding at optimum time - capable of increasing yields but an increasing acreage is being sowed late due to seeding after soybeans and corn harvested with pickers. Effect on production is to lower yield		
Effect of the above practices on production:		
Yield per acre	24 bushels	25.5 bushels

1/ Improved production practices are generally employed in various combinations. However, the type of combination and extent can't be sufficiently accurately established to present them by bundles of practices with present and attainable acreage of each bundle.

Form 2. (Continued)

Improved Production Practices on Crops, 1950 and "1955 Attainable" in Ohio

Major Improved Production Practices to be Expanded	Estimated Extent of Use In 1950	1955
	(acres)	(acres)
SOYBEANS		
Adequate lime	600,000	800,000
Correct seed bed preparation, planting, and cultivating methods	400,000	750,000
Correct variety or strain of seed	600,000	850,000
Fertilized at rate of 0#-24#-24# per acre	220,000	220,000
Fertilized at rate of 0#-36#-36# per acre	---	150,000
Use good crop rotation	300,000	350,000
Effect of the above practices on production:		
Yield per acre	22 bushels	26 bushels
MEADOW		
Land limed	1,300,000	1,950,000
Fertilized 0#-40#-40# per acre	50,000	200,000
Correct seeding methods	900,000	1,200,000
Correct grass & legume seeding rates & mixtures	900,000	1,200,000
Correct cutting and pasturing dates	900,000	1,200,000
Effect of the above practices on production:		
Yield per acre	1.5 Tons 2/	1.75 Tons 2/
PERMANENT PASTURE		
Limed	165,000	300,000
Limed and fertilized with 60# phosphorus and 20# potash per acre	135,000	
Limed and fertilized with 60# phosphorus and 30# potash		300,000
Frequent shifting of animals to different fields	600,000	900,000
Grazed to capacity but not beyond	300,000	500,000
Effect of the above practices on production:		
Yield per acre	1.67 a.u.m.	1.9 a.u.m.

2/ Only a relatively small percentage of farmers harvest all of their annual meadow production as hay. A large part of the production after the first cutting is harvested in the form of pasture.

Form 3. Estimates of crop and pasture yields per acre, "1955 attainable" and maximum, with comparisons

Ohio

Area or State

Crop	Acreage	Unit	Base period	Yield per acre: Ave. for base period	1950 adjusted 1/	1952 attainable	1955 attainable 2/	Maximum 2/
Column	1	2	3	4	5	6	7	8
Corn, all	P	Bu.	1940-49	49.0	52	54	60	82
Soybeans for beans	H	Bu.	1939-48	19.6	22	23	26	34
Burley tobacco	H	Lb.	1940-49	1074.	1100	1150	1300	
Other domestic tobacco	H	Lb.	1940-49	1236.	1350	1400	1500	
Sugar beets	P	Ton	1940-49	9.6	10	10	12	15
Irish potatoes	P	Bu.	1940-49	124.	200	220	250	400
Oats for grain	H	Bu.	1940-49	38.0	38	38	41	61
Barley for grain	H	Bu.	1940-49	27.2	27	27	28	40
Winter wheat	H	Bu.	1940-49	23.3	24	24	25	36
Rye for grain	H	Bu.	1940-49	17.1	17	17	19	25
Buckwheat	P	Bu.	1939-48	18.0	18	18	20	
Peas	P	Ton	1939-48	0.7	0.7	.7	0.9	
Tomatoes	P	Ton	1939-48	6.6	7.0	7.0	8.0	
Sweetcorn	P	Ton	1939-48	2.2	2.4	2.4	2.7	
Cabbage (Kraut)	P	Ton	1939-48	8.6	9.0	9.0	9.5	
Hay, all tame	H	Ton	1940-49	1.46	1.5	1.5	1.7	3.5
Rotation (cropland) pasture		a.u.m.		2.6	2.67	2.67	3.0	5.0
Open permanent pasture and range in farms		a.u.m.		1.6	1.67	1.70	1.9	3.4
Woodland pasture in farms		a.u.m.		0.4	0.4	0.4	0.4	0.5
After 1st cutting hay		a.u.m.		1.0	1.0	1.0	1.2	2.0
New meadow seedings etc.		a.u.m.		.5	.5	.5	.6	.8

H = Harvested P = Planted A.U.M. = Annual Unit Month

1/ Assuming 1950 cropping pattern and practices, and normal weather.

2/ Yield on 1955 attainable acreage (Form 1, Column 5) with respective assumptions as set forth in "A Procedural Guide for Cooperative Work in the Analysis of Agricultural Productive Capacity," May 1951.

An estimate was made by the subcommittee on crops of the maximum average crop and pasture yields that might be achieved for the state as a whole, under normal weather, if full adoption of the now-known improvement practices that the more successful farmers could profitably carry out, were adopted and sufficient time allowed to lapse to obtain full benefit from those practices that require time to produce full results. On the basis of these assumptions the maximum yield for corn was placed at 82 bushels. Yields estimated to be maximum for meadow and pasture crops indicate that of the major crops, they possess the greatest opportunity for expansion above present levels (see form 3, column 7, page 15).

Some Factors Essential to Attainment

A major factor in the realization of the production capacity considered possible by 1955 is the level of management farmers are prepared to exercise. This is particularly true since the production practices capable of expanding output on a sustained basis by then require increasing amounts of managerial effort and skill to initiate and successfully carry out. A second major production factor upon which the attainment of the 1955 production depends is the availability of a greatly increased quantity of commercial fertilizer, especially nitrogen (see form 4, page 17). Production and distribution of larger amounts of liming materials will also be needed. Most farms are reasonably well supplied with power and equipment, which with a few exceptions will be adequate to do the job provided necessary repairs and replacements are available when needed (see form 6, page 18).

Much progress has been made in increasing the efficiency of farm labor in the production of crops in the past 20 or 30 years. For instance, during that time man hours to produce an acre of corn have been reduced more than two-thirds. Some progress has also been made in cutting time required to care for livestock, and it is in this area that the most progress is expected to be made by 1955 (see form 7, page 19). It is highly questionable, however, in view of savings already made in crops whether sufficient further progress can be made in labor efficiency during the next few years to prevent the supply and quality of farm labor from being a major limiting factor.

Livestock Numbers and Production

Estimated Livestock Numbers and Production

In view of our greatly expanded population with its high per capita consumption of livestock products and the current possibility of sharply increased needs if the present international conflict should spread, the production adjustment committee recommends that renewed effort be given by farmers to raising their level of efficiency of converting feed and labor into livestock products. A greater opportunity exists for expanding the output of animal products through making a more efficient use of feed than can be permanently achieved by attempting to expand the feed through larger acreages.

On many farms the replacement of low producing animals with more

Form 4.

Estimated Quantities of Fertilizer Constituents Used in 1950 and Needed Annually in "1955 Attainable"

Ohio

Area or State

Crop or kind of pasture 1/	Fertilized 1950	1950 Acres fertilized	1950 Rate per acre N-P_2O_5-K_2O	1950 Quantities used Nitrogen (N)	1950 Quantities used Phosphoric acid (P_2O_5)	1950 Quantities used Potash (K_2O)	1955 attainable Acres fertilized	1955 attainable Rate per acre N - P_2O_5 - K_2O	1955 attainable Quantities required Nitrogen (N)	1955 attainable Quantities required Phosphoric acid (P_2O_5)	1955 attainable Quantities required Potash (K_2O)
		1,000 acres	Pounds	Tons	Tons	Tons	1,000 acres	Pounds	Tons	Tons	Tons
Corn	95%	3215	8 - 32 - 24	12860	51440	38580	3322	16.3 - 36 - 27	27146	59796	48847
Wheat	98%	2128	7 - 32 - 22	7448	34048	23408	2100	8 - 36.2 - 23.5	8400	38048	24725
Oats	80%	945	4 - 24 - 12	1890	11340	6615	1105	65 - 30 - 18	3591	16575	9945
Barley	95%	26	7 - 24 - 18	91	312	234	29	7 - 24 - 18	101	348	261
Rye	80%	28	4 - 24 - 12	56	336	118	20	4 - 24 - 12	40	240	120
Soybeans	20%	220	4 - 24 - 20	440	2640	2200	325	4 - 24 - 20	650	3900	3250
Tobacco		20	18 - 72 - 72	180	720	720	20	20 - 72 - 72	200	720	720
Sugar beets		30	10 - 40 - 40	150	600	600	32	10 - 40 - 40	160	640	640
Potatoes		38	30 - 120 - 120	585	2340	2340	35	30 - 120 - 120	525	2100	2100
Popcorn		12	8 - 32 - 22	48	192	132	12	12 - 34 - 28	72	192	132
Commercial Vegetables		75	65 - 90 - 45	2437	3375	1687	80	65 - 90 - 45	2600	3600	1800
Home gardens		50	15 - 30 - 15	350	750	375	50	15 - 30 - 15	350	750	375
All tree & other fruit		90	10 - 20 - 20	450	900	900	90	10 - 20 - 20	450	900	900
Hay		75	2 - 40 - 20	75	1500	750	200	2 - 40 - 40	200	4000	4000
Perm. Pasture	3%	135	2 - 60 - 20	270	4050	1350	300	2 - 60 - 30	300	9000	4500
All other uses and non-farm				1530	2969	1611			1800	3600	1800
Total tons		xx	xx	28860	117512	81520	xx	xx	46585	144409	100115

1/ Acres and rates from Form 2 for crops and pasture considered on that form.

Form 5 - Estimated acreage limed, acreage needing lime, and quantities of $CaCO_3$ equivalent needed in Ohio.

Item	At end of 1950		Required to establish on acreage in Col.2		Required annually for maintenance on acreage in Col. 1	
	Total acres limed and needing lime	Total acres needing lime 1/	Material	$CaCO_3$ equivalent	Material	$CaCO_3$ equivalent
Column	1	2	3	4	5	6
	Acres	Acres	Tons	Tons	Tons	Tons
Cropland	10,600,000	10,000,000	27,800,000	25,000,000	1,700,000	1,500,000
Permanent pasture	4,200,000	4,000,000	9,000,000	8,100,000	500,000	450,000
Total	14,800,000	14,000,000	36,800,000	33,100,000	2,200,000	1,950,000

1/ Include acreage that needs initial application and acreage on which previous applications were inadequate. (Needed to grow alfalfa and sweet clover.)

Form 6 - Estimated use and needs for specialized machines and equipment, 1950 and 1955 attainable.

Kind of machine or equipment	Crop	Number of machines		Portion of acreage covered	
		In use 1950	Needed 1955	Estimated 1950	Recommended 1955
		Number	Number	Percent	Percent
Field equipment:					
Mechanical pickers	Corn	33,000	37,000	75	80
Pick-up balers	Hay			50	55
Hay crusher		150	5,000		10
Grain combine		Adequate			
Field forage harvesters	Hay, Silage	(?)	(?)	7	15
Ditching Machine			Replacement & repairs urgently needed.		
Barn equipment:					
Milking machines		44,000	45,000		
Manure loaders, power		30,000	40,000		
Drying fans			increase		
Silos, upright		20,000	25,000		

Form 7. - Estimated man-hour requirements per acre, and per unit of livestock or livestock products 1950 and "1955 attainable"

Ohio
Area or State

Crop	1950			Changes 1950-1955			1955		
	Pre-harvest	Harvest	Total	Pre-harvest	Harvest	Total	Pre-harvest	Harvest	Total
	Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours
Corn	6.5	7.0	13.5		-1.5	-1.5	6.5	5.5	12.0
Wheat	2.5	5.5	8.0		-.5	-.5	2.5	5.0	7.5
Rye	2.5	5.5	8.0						8.0
Oats	3.0	5.5	8.5	-.5	-.5	-1.0	2.5	5.0	7.5
Barley	2.5	5.5	8.0				2.5	5.5	8.0
All hay	.5	6.0	6.5		-.5	-.5	.5	5.5	6.0
Soybeans	3.2	2.5	5.7	+.3		+.3	3.5	2.5	6.0
Potatoes			90.0		-5.0	-5.0			85.0
Sugar beets			80.0		-10.0	-10.0			70.0
Tomatoes, Fresh			160.0						160.0
Tomatoes, Processing			115.0						115.0
Cabbage			40.0						40.0
All fruit			140.0						140.0
Tobacco, cigar			260.0		-10.0	-10.0			250.0
Tobacco, burley			330.0		-30.0	-30.0			300.0

Livestock 1/	1950 Total	Changes 1950-1955 Total	1955 Total
	Hours	Hours	Hours
100# Pork	3.0	-.15	2.85
10 doz. eggs	1.33	-.08	1.25
Turkey raised	.8	-.05	.75
Chicken raised	.65	-.03	.62
100# (4.1% milk)	2.25	-.25	2.00
Veal calf	2.5		2.5
Dairy replacement	25.0	-3.0	22.0
Dairy bull	85.0		85.0
100# beef	4.0	-0.2	3.8
100# lamb	7.8	-0.3	7.5
Ewe	6.5	-0.5	6.0
Broiler	0.5		0.5
Beef cow and bull	25.0	-3.0	22.0
Horse	100.0		100.0

1/ Unit of livestock or livestock production.

productive ones, the employment of better sanitary practices to reduce death losses and poor gains due to disease and parasites and the feeding of larger amounts of hay and pasture, to mention but a few of the more important factors affecting efficiency, can greatly expand the output without drawing heavier on already depleted soils.

Horses: In 1910, according to the Census, there were 910,224 horses and mules on Ohio farms. In 1940 Census reported 447,052 horses and mules. On January 1, 1951, according to the Federal Crop Reporting Board there were 117,000. Number of colts being raised is insufficient to maintain the present low number; consequently, a further decrease is expected, but at a somewhat slower rate. It is estimated that there will be not more than 70,000 head by January 1, 1955 (see form 10). This sharp reduction in numbers has made, and will continue to make for a few years more feed and pasture available for other types of livestock, particularly the roughage and pasture consuming types.

Milk Cows: On January 1, 1945, there were 1,172,000 milk cows on farms in the state. This was the largest number to be recorded to date. During the next 4 years the number dropped each year and on January 1, 1949, stood at 1,060,000 head. Between then and January 1, 1951, no change took place in the number of cows kept for milk.

With abundant feed supplies and good market prospects some increase in number might be expected to take place by 1955. However, only slight increase is expected to be attainable by 1955 in view of the current and prospective labor situation. The opinion of the sub committee on dairy productive capacity for the state, cow numbers for Ohio are fairly well-stabilized and unlikely to be expanded beyond 1,100,000 by 1955. Considerable expansion in total milk production is expected to continue to take place, however, as a result of the use of higher producing replacements and the further adoption of improved production practices. Increase in heifer calves saved in 1950 over those saved in 1949 indicates the possibility of a slight rise in numbers through 1952. But, continued heavy culling caused by high beef prices will be a strong offsetting factor.

Beef Cattle: Abundant roughage and pasture on many farms, together with high prices of both feeder and finished cattle have resulted in an increase in beef cow numbers. On January 1, 1951, 112,000 cows were reported on farms as compared to 99,000 a year earlier.

As more hay and pasture become available, the number is expected to be expanded still further. Number thought to be attainable by the sub committee on meat annual numbers was 150,000 or approximately 50,000 more by January 1, 1955, than was reported on January 1, 1950.

With the prospects for adequate to abundant corn supplies and the continued heavy demand for beef by the consuming public, the number of cattle placed on feed is expected to remain near the present high level and with the anticipated number of beef breeding cows in the state to rise to 170,000 head in 1955.

Poultry: Number of hens and pullets on farms is expected by the sub committee on poultry, to remain fairly stable at current levels.

Ohio - Estimates of Supply of Feeds Available for Feeding Livestock and for Other Purposes, "1955 Attainable" With Comparisons

Item	Year Beginning Oct. 1			
	1950-51 Reported	1951-52 Expected	1952-53 Suggested	1955-56 Attainable
Feed Grains	Tons 1000	Tons 1000	Tons 1000	Tons 1000
Corn, all				
Carryover beginning of year on farms	433.4	280.0	280.0	420.1
Production (inc. gr. in silage and fodder)	4899.9	5645.5	5369.7	5714.3
Total supply	5333.3	5925.5	5649.7	6134.4
Seed	16.8	16.8	16.8	16.8
Carryover end of year on farms	280.0	448.1	400.0	420.1
Net supply	5036.5	5460.6	5232.9	5697.5
Oats				
Carryover beginning of year on farms	99.9	79.3	96.0	120.0
Production	660.7	804.9	747.8	829.8
Total supply	760.6	884.2	843.8	949.8
Seed	42.0	45.0	45.0	47.0
Carryover end of year on farms	79.3	96.0	100.0	120.0
Net supply	639.3	743.2	698.8	782.8
Barley				
Carryover beginning of year on farms	.9	1.1	1.2	1.2
Production	17.4	14.8	16.2	18.0
Total supply	18.3	15.9	17.4	19.2
Seed	1.2	1.2	1.2	1.2
Carryover end of year on farms	1.1	1.2	1.2	1.2
Net supply	16.0	13.5	15.0	16.8
Other Grains				
Wheat fed on farms where grown	251.9	252.0	250.0	250.0
Rye fed on farms where grown	9.5	5.0	5.0	6.5
Buckwheat fed on farms where grown	4.5	4.5	4.5	4.5
Soybeans for processing (before oil extracted)	690.6	735.5	670.0	773.8
Total net supply of feed and other grains available for feeding livestock, industrial use, and for outshipments	6648.3	7214.3	6876.2	7531.9
Grain needed for feeding livestock	4793.5	4781.5	4848.1	5037.9
Commercial by-products needed for feeding livestock	719.9	731.0	750.0	761.1
Total all types of concentrated feeds needed for livestock 1/	5513.4	5512.5	5598.1	5799.(

1/ Includes grains, by-product feeds, seeds, and dry skim milk.

Ohio - Estimates of Supply of Feeds Available for Feeding Livestock and for Other Purposes, "1955 Attainable" With Comparisons

Item	Year Beginning October 1			
	1950-51 Reported	1951-52 Expected	1952-53 Suggested	1955-56 Attainable
	Tons 1000	Tons 1000	Tons 1000	Tons 1000
Other farm-produced concentrates				
Soybeans fed	7.0	7.0	7.0	7.0
Skim milk fed (dry basis)	4.0	4.0	4.0	4.0
Hay				
Carryover beginning of year (May 1)	391	399	500	600
Tame hay production	3,994	4,326	4,102	4,658
Total supply	4,385	4,725	4,602	5,258
Carryover end of year (May 1)	399	500	500	600
Net supply	3,986	4,225	4,102	4,658
Total needed for feeding livestock	3,705	3,786	3,920	4,226
Other roughages produced and fed				
Corn silage	1,054	1,000	950	900
Corn stover	700	650	600	500
Small grain straw	100	100	100	100
Grazing capacity of pastures & ranges (in animal unit months)	Grazing season			
	1951 Expected a.u.m.	1952 Expected a.u.m.	1953 Suggested a.u.m.	1955 Attainable a.u.m.
Rotation (cropland) pasture	4,926	5,001	5,014	6,285
Open permanent pasture and range in farms	7,431	7,565	7,565	8,360
Woodland pasture in farms	520	520	500	440
Other pasture in farms	1,750	1,750	1,750	2,100
Total carrying capacity	14,627	14,836	14,829	17,185
Total requirements for livestock	12,900	13,024	13,211	13,524

In spite of abundant feed and good demand for eggs the number considered as attainable was not significantly different from the number reported for the past few years.

Scarce and high priced labor is expected to limit expansion in the commercial flocks. Furthermore, the small increase that may arise from favorable feed supplies and egg prices by 1955 will largely be offset by the tendency on many farms for the size of typical farm flock to adjust downward to the number needed for home consumption.

Chickens raised, exclusive of commercial broilers, like the number of hens and pullets is expected to remain stabilized near the 28 million level. Chickens raised on farms are primarily for the production of replacement stock and for farm family consumption. Small or absence of profit in the production of cockerels for sale on the typical farm and increase in purchase of pullet chicks will neutralize any tendency on the part of a few farmers to expand the number raised.

Continued high meat prices, together with adequate feed supplies, and increased familiarity with both broiler and turkey production techniques have resulted in substantial increases in both commercial broiler and turkey production in the state in recent years. During the period 1937-41 an average of 760,000 turkeys were raised per year. In 1951 1,500,000. With prospective feed supplies and the basic assumption of continued favorable prices the sub committee was of the opinion that the production of 1.8 million turkeys would be attained in 1955 and could be sustained at near that level thereafter.

Broiler production, reported at slightly under 6 million in 1950 by the crop reporting service was expected to reach 10 million in 1951. Considerable additional increase is in prospect with the number rising to perhaps as many as 20 million by 1955.

Sheep: Since 1943 sheep numbers have dropped more than half in Ohio. On January 1, 1943, there were 2,322,000 sheep on farms in Ohio. On January 1, 1951, there were 1,128,000 head. In the opinion of the sub committee on livestock the downward adjustment in numbers was carried too far on many farms. As early as 1947 the production adjustment committee indicated the unsoundness of the trend from the viewpoint of farm income and national well being.

Increased number of ewes on January 1, 1951, over January 1, 1950, although small is the first indication that the bottom may have been reached. With the enlarged amounts of forage and pasture produced in recent years and the need for further expansion of these crops for soil maintenance, ample feed is available for a sizable expansion in number. However, it is not expected that the number will increase more than 150,000 head by 1955.

Trend in number of lambs placed on feed depends to a considerable degree upon the size of the lamb crop for the country as a whole, and available feed supplies. With the upturn in sheep numbers currently in prospect and increasing amounts of forage crops, a slight increase in lambs placed on feed in Ohio is expected by 1955.

TABLE 4 - Ohio: Corn Production and the Number of Sows Farrowed by Years from 1940 to Date

Period or year	Production (1000 bu.)	Sows farrowed (1000 head)		
		Spring	Fall	Total
1935-44 average	155,800	401	350	751
1940	122,360	450	367	817
1941	160,974	392	360	752
1942	185,752	459	432	891
1943	174,042	551	488	1,039
1944	142,956	474	337	811
1945	176,913	360	364	724
1946	178,409	400	335	735
1947	138,826	428	342	770
1948	215,924	381	352	733
1949	202,552	450	384	834
1950	174,928	472	415	887
1951 indicated	201,544 1/	467 2/	403 2/	870 2/
1952 suggested	191,700	477	408	885
1955 attainable	204,000	500	425	925

1/ August 1 crop report

2/ June 1 pig survey

Form 10 - Estimates of number of livestock and production of livestock and livestock products, 1955 attainable, with comparisons for Ohio

Item of livestock and livestock products	Unit	Reported for 1950	Reported or estimated for 1951	1952 suggested	1955 attainable
Column	1	2	3	4	5
		(1000)	(1000)	(1000)	(1000)
On farms, January 1:					
Horses, mules and colts	Number	138	117	100	70
Cattle and calves, all	do.	2,149	2,235	2,270	2,380
Cows kept for milk, 2 yrs. /	do.	1,060	1,060	1,060	1,100
Other cows, 2 yrs. /	do.	99	112	130	150
Sheep and lambs, all	do.	1,140	1,128	1,155	1,275
Ewes, 1 yr. /	do.	708	715	735	810
Hens and pullets	do.	18,731	18,346	18,500	18,500
Turkey hens	do.	95	124	128	140
		Reported in 1950	Expected in 1951	Suggested in 1952	Attainable in 1955
During year:					
Sows farrowed, spring	do.	472	467	477	500
Pigs saved, spring	do.	3,049	3,129	3,196	3,550
Sows farrowed, fall	do.	415	403	408	425
Pigs saved, fall	do.	2,872	2,760	2,836	3,124
Chickens raised (excl. comm. broilers)	do.	27,366	27,366	28,000	28,000
Commercial broiler production	do.	5,823	10,000	12,000	20,000
Turkeys raised	do.	1,305	1,500	1,550	1,800
Cattle put on feed 1/	do.	165	160	150	170
Sheep and lambs put on feed 1/	do.	288	260	265	300
Milk cows, average during year	do.	1,013	1,015	1,015	1,053
Calves born	do.	997	1,008		1,100
Lambs saved	do.	651	658		769
Milk produced	Pound	5,551,000	5,684,000	5,785,500	6,318,000
Eggs produced	Dozen	220,583	223,209	229,708	239,708
Wool produced	Pound	7,812	7,727	7,912	8,734
Chickens raised	do.	109,960	110,000	112,280	112,280
Commercial broiler production	do.	18,634	32,000	38,400	64,000
Turkeys raised	do.	23,086	26,100	26,970	30,600
Net production, cattle and calves	do.	491,135	498,405	508,480	547,400
Net production, sheep and lambs	do.	41,410	41,172	42,270	48,450
Net production, hogs	do.	1,176,492	1,180,877	1,217,328	1,323,454

1/ Twelve-month period beginning October 1.

Hogs: Since 1949 the Production Adjustment committees have suggested each year to Ohio farmers that they not expand further and preferably contract their total farrowings per year below their present level which was 834,000 in 1949, 887,000 in 1950. These recommendations were made in view of the then existing supply and demand conditions and also to prevent excessive demand for corn which would counteract the trend toward achieving the balance needed between the intertilled and sod crop acreage. In the interest of increased feed efficiency and in meeting consumer demands the committee also recommended that marketings be made at 210-225 pound weights.

In the opinion of the members of the present production adjustment committee Ohio can attain and sustain thereafter a swine enterprise farrowing a total of 900,000 to 925,000 litters per year by 1955.

Attainable Production Rates and Desirable Adjustments in Production and Management Practices

Some increase in the production rates of each of the major types of livestock was estimated to be attainable by 1955 by the various cooperating sub committees. These increases in output by 1955 over the 1950 level amounted to 520 pounds of milk per dairy cow, 12 eggs per hen, .53 pigs per litter, 2 beef calves per 100 brood cows and 10 lambs per 100 ewes.

In addition significant savings in feed per 100 pounds of output was anticipated by 1955 (see form 9, page 27). These increases in production rates and efficiency are considered possible through the more wide spread adoption of improved production practices. Some of the more important practices and improvements recommended for expansion are set forth in form 9, page 27.

A part of the expected increase will arise from improvements in breeding and selection already in progress on many farms and from that which is initiated in the near future. Much that is to be gained through further improvements in breeding and selection, however, will not appear in increased production rates until later as insufficient time is available for it to materialize by 1955.

Livestock Feed Requirements and Availability

Farmers tend to adjust their feeding rates to fit prevailing feed supplies and price conditions. In view of increased amounts of forage crop available and in prospect and based on the recommendations of the cooperating livestock specialists, somewhat heavier rates of hay consumption and slightly lower rates of grain consumption were used in estimating total feed requirements for 1955 and the intervening years than was used in previous studies.

On the basis of the revised feeding rates and the numbers of the different types of livestock suggested as attainable in 1952 and 1955, 5,603,700 tons of concentrates (grains and by-products feeds), 3,920,000 tons of hay, 13,211,000 animal unit months of pasture will be needed in 1952 and for 1955, 5,799,000 tons of concentrates; 4,226,00 tons hay; 13,524,000 animal unit months of pasture. (See form 11a, b, and c, pages 30, 31 and 32 for rates of consumption and feed requirements.)

Form 9. Improved Livestock Production Practices and Production Rates, 1950 and 1955 Attainable in Ohio

Major Improved Production Practices to be Extended	Production Rate	
	1950	1955 Attainable
Dairy Enterprise		
Feed good quality hay liberally (early cut, properly cured legume mixture)		
Increase in number of herds with access to grass silage		
Correct adjustment of concentrates (amount and content) to type of forage fed and amount of milk produced. (Some feed too much, some too little)		
Adequate concentrate and liberal roughage feeding to replacement animals to produce large vigorous animals		
Individual production records and testing		
Careful and prompt culling		
Artificial insemination or proven sires		
Careful selection of replacements		
Effect of above practices on production:		
Pounds of milk per cow	5480 lbs	6000 lbs
Poultry Enterprise		
Full feeding of good ration		
Liberal use of legume pasture		
Keep all pullet flocks		
Obtain replacement chicks from high producing birds		
Careful culling		
Adequate sanitation program		
Isolated rearing of chicks		
Disease prevention by vaccination where practical treatment available		
Purchase of good quality and disease free chicks		
Effect of above practices on production:		
Eggs produced during the year per bird of laying age on hand during the year	178	190

Form 9 (Continued)

Improved Livestock Production Practices and Production Rates, 1950 and 1955 Attainable in Ohio

Major Improved Production Practices to be Extended	Production Rate 1950	Production Rate 1955 Attainable
Swine Enterprise		
1. Use of properly balanced rations		
2. Maximum use of legume pasture		
3. Careful selection of breeding stock for size of litter raised and efficiency of gain		
4. Employ recommended sanitation program		
5. Well designed and adequate equipment		
6. Adequate feeding and care of breeding animals		
7. Timely immunization against diseases where practical treatment exists		
8. Use of new feed materials such as antibiotics, etc.		
Effect of above practices on production:		
Pigs raised per sow	6.67	7.2
Pounds of concentrate per cwt. of pork produced including breeding herd	465. lbs	435. lbs
Beef Enterprise		
Commercial feeding		
Use of corn or grass silage		
Liberal use of hay		
Effect of above practices on production:		
Concentrate fed per head	1900 lbs.	1800 lbs.
Commercial Beef Cow Enterprise		
Liberal use of hay and other roughages, silage, etc.		
No or very limited concentrate feeding		
Careful and prompt culling of non-breeders, poor keepers, and producers of slow growing calves		
Timeliness in breeding to take maximum advantage of pasture season		
Use of pasture mixtures that minimize bloat losses		
Selection of breeding stock for efficient rates of gain		
Effect of above practices on production:		
Percent calf crop	90%	92%
Grain per breeding animal	250 lbs	170 lbs
Weight of calf at weaning	430 lbs	450 lbs

Form 9 (Continued)

Improved Livestock Production Practices and Production Rates, 1950 and 1955 Attainable in Ohio

Major Improved Production Practices to be Extended	Production Rate	
	1950	1955 Attainable
Sheep Enterprise		
Adequate equipment for use at lambing time including heat bulbs and lamb brooders		
Use of glucose solution		
Cross breeding for hybrid vigor		
Timely treatment for parasites and disease		
Use of abundant legume roughage		
Effect of above practices on production:		
Lambs marketed per 100 ewes	92	102

With the level of crop production believed to be attainable in 1955 the supply of feed and other types of grain available for livestock, after due allowance has been made for seed and carryover on farms would amount to 7,531,900 tons for the feed year, October 1955-56. This would supply a wide margin between supply and livestock needs which can be used for industrial purposes and outshipments to deficit feed areas (see form 8, page). The suggested cropping pattern and attainable yields for 1952 crop year would provide 6,876,200 tons of feed and other types of feed grain for livestock for the feed year, October 1952-53. This level of production would also leave adequate supplies for other uses.

Hay and pasture supplies attainable under the committee's recommended land use and cropping program for 1955 would supply 4,658,000 tons of hay and 17,185,000 animal unit months of pasture which will be more than adequate under average weather conditions. Suggested program for 1952 will also provide enough of both of these feeds if average weather conditions prevail. Neither the potential hay nor pasture production, however, are sufficiently above requirements to meet recommended consumption rates if weather conditions should drop much below normal.

Form 11a

Ohio: Estimated quantities of feeds needed for feeding livestock expected for the 12-month period beginning October 1, 1950.

Class of livestock	Feed per animal, bird or cwt.					Total livestock and feed					
	Concentrates				Tame and wild hay	Units of live stock	Concentrates			Hay	Pasture and grazing (1000)
	Grains 1/	Seeds and skim milk	Commercial by-products	Total			Grains 1/	Seeds and skim milk	Commercial by-products		
Column	1	2	3	4	5	6	7	8	9	10	11
	Pounds	Pounds	Pounds	Pounds	Pounds	1000 Units	1000 Tons	1000 Tons	1000 Tons	1000 Tons	A. U. Months
1. Horses, mules & colts	1300			1300	4000	117	76.0			234	702
2. Milk cows	1530	5	265	1800	3600	1060	810.9	2.6	140.4	1908	6360
3. Beef cows	250			250	4000	112	14.			224	784
4. Feeder cattle	1750		150	1900	1500	160	140.0		12.0	120	160
5. Other cattle & calves	500	5	70	575	2000	938	234.5	2.3	32.8	938	2345
6. Ewes, 1 year +	75			75	450	715	26.8			161	786
7. Feeder sheep and lambs	105		15	120	200	260	13.6		1.9	26	26
8. Other sheep and lambs	40			40	400	224	4.5			45	224
9. Hogs, cwt. net production	425	1	39	465	5	11765	2500.0	5.8	229.4	29	1401
10. Hens and pullets	70		18	88	xxx	18346	642.1		165.1	xxx	55
11. Chickens raised	18		6	24	xxx	27366	246.3		82.1	xxx	27
12. Comm. broilers produced	6		6	12	xxx	10000	30.0		30.0	xxx	
13. Turkeys raised	60		30	90	xxx	1500	45.0		22.5	xxx	14
14. Turkey hens	110		50	160	xxx	125	6.8		3.1	xxx	1
15. Other livestock							3.0		0.6	20	15
Total							4793.5	10.7	719.9	3705	12900

1/ Includes corn, oats, barley, rye, and wheat, fed from any source including harvested grain, corn silage, corn fodder, unthreshed grain, or commercial mixed feeds.

Form 11b

Ohio: Estimated quantities of feeds needed for feeding livestock suggested for the 12-month period beginning October 1, 1951

Class of Livestock	Feed per animal, bird or cwt.					Total livestock and feed					
	Concentrates				Tame and wild hay	Units of live stock	Concentrates			Hay	Pasture and grazing (1000)
	Grains 1/	Seeds and skim milk	Commercial by-products	Total			Grains 1/	Seeds and skim milk	Commercial by-products		
Column	1	2	3	4	5	6	7	8	9	10	11
	Pounds	Pounds	Pounds	Pounds	Pounds	1000 Units	1000 Tons	1000 Tons	1000 Tons	1000 Tons	1000 Tons
1. Horses, mules & colts	1300			1300	4000	100	65.0			200	800
2. Milk cows	1530	5	265	1800	3700	1060	810.9	2.6	140.4	1961	6,360
3. Beef cows	250			250	4000	130	16.2			260	910
4. Feeder cattle	1750		150	1900	1600	150	131.2		11.2	120	150
5. Other cattle and calves	500	5	70	575	2000	960	240.0	2.4	33.6	960	2,400
6. Ewes, 1 year /	75			75	450	735	27.6			165	608
7. Feeder sheep & lambs	105		15	120	200	265	13.9		2.0	26	26
8. Other sheep and lambs	40			40	400	225	4.5			45	225
9. Hogs, cwt. net production	420	1	39	460	5	11,809	2479.8	5.9	230.2	29	1,431
10. Hens and pullets	70		18	88	xxx	18,500	647.5		166.5	xxx	55
11. Chickens raised	18		6	24	xxx	28,000	252.0		84.0	xxx	28
12. Comm. broilers produced	6		6	12	xxx	12,000	36.0		36.0	xxx	
13. Turkeys raised	60		30	90	xxx	1,550	46.5		23.2	xxx	15
14. Turkey hens	110		50	160	xxx	135	7.4		3.3	xxx	1
15. Other livestock							3.0		0.6	20	15
Total							4781.5	10.9	734.0	3786	12,924

1/ Includes corn, oats, barley, rye and wheat, fed from any source including harvested grain, corn silage, corn fodder, unthreshed grain, or commercial mexed feeds.

Form 11c

Ohio: Estimated quantities of feeds needed for feeding livestock reported for the 12-month period beginning October 1, 1955.

Class of livestock	Feed per animal, bird or cwt.					Total livestock and feed					
	Concentrates				Tame and wild hay	Units of live stock	Concentrates			Hay	Pasture and grazing (1000)
	Grains 1/	Seeds and skim milk	Commercial by-products	Total			Grains 1/	Seeds and skim milk	Commercial by-products		
Column	1	2	3	4	5	6	7	8	9	10	11
	Pounds	Pounds	Pounds	Pounds	Pounds	1000 Units	1000 Tons	1000 Tons	1000 Tons	1000 Tons	A. U. Months
1. Horses, mules & colts	1300			1300	4000	70	45.5			140	420
2. Milk cows	1540	5	255	1800	4000	1,100	847.0	2.7	140.2	2,200	6,600
3. Beef cows	170			170	4000	150	12.7			300	1,050
4. Feeder cattle	1675		125	1800	1800	170	142.4		10.6	153	170
5. Other cattle & calves	550	5	70	625	2200	1,000	275.0	2.5	35.0	1,100	2,500
6. Ewes, 1 year +	75			75	475	810	30.4			192	891
7. Feeder sheep and lambs	105		15	120	200	300	15.7		2.2	30	30
8. Other sheep and lambs	40			40	425	245	4.9			52	245
9. Hogs, cwt. net production	399	1	35	435	6	13,234	2640.1	6.6	231.5	39	1,500
10. Hens and pullets	70		18	88	xxx	18,500	647.5		166.5	xxx	56
11. Chickens raised	18		6	24	xxx	28,000	252.0		84.0	xxx	28
12. Comm. broilers produced	6		6	12	xxx	20,000	60.0		60.0	xxx	
13. Turkeys raised	60		30	90	xxx	1,800	54.0		27.0	xxx	18
14. Turkey hens	110		50	160	xxx	140	7.7		3.5	xxx	1
15. Other livestock							3.0		0.6	20	15
Total							5037.9	11.8	761.1	4226	13,524

1/ Includes corn, oats, barley, rye, and wheat, fed from any source including harvested grain, corn silage, corn fodder, unthreshed grain, or commercial mixed feeds.